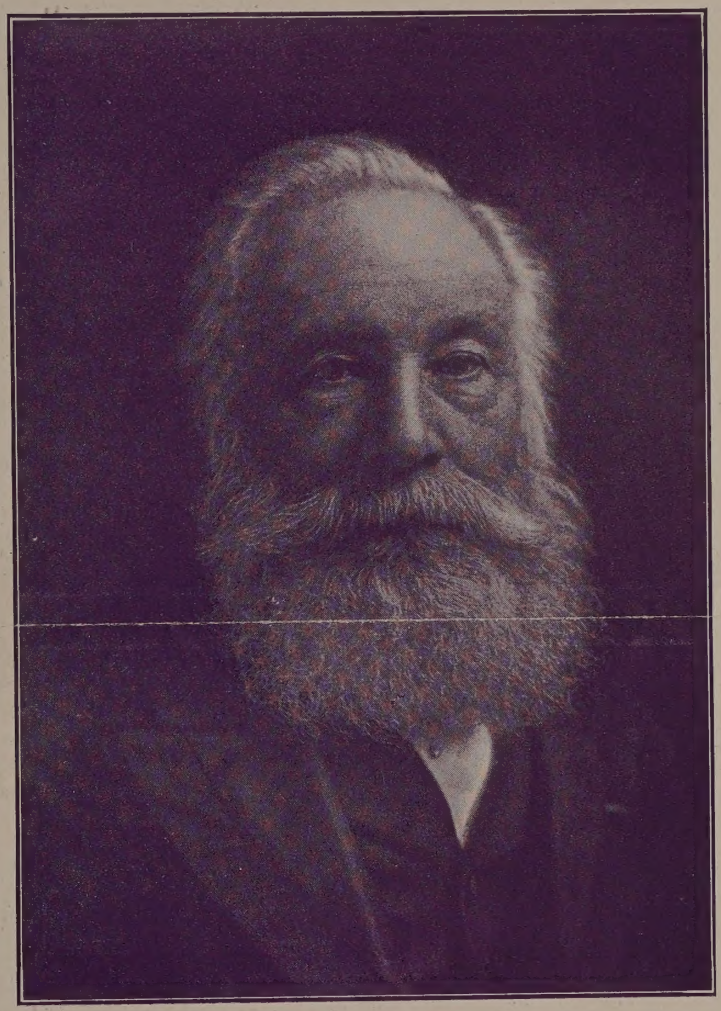

Yours Sincerely
W. H. Perkin

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THE PERKIN JUBILEE

HONOR THE DISCOVERER.

LARGE GATHERING PRAISES SIR WILLIAM HENRY PERKIN.

Dyestuff and Chemical Trade Banquet at Delmonico's—Distinguished Speakers and Guests of Honor Unite in Rendering Their Tribute of Obligation to the Founder of the Coal Tar Industry—Details of the Function.

LAST SATURDAY NIGHT, October 6, a company of some four hundred gathered in the banquet room of Delmonico's to do honor to Sir William Henry Perkin, the discoverer of mauve and the founder of the coal tar industry. For a long time a committee of fifteen representatives of the dyestuff and chemical trade had been arranging the details of functions which were to constitute the Perkin Jubilee of the Coal Tar Industry and which culminated in this banquet of unusual proportions and completeness of detail.

The banquet room was profusely decorated with the intermingled flags of the United States, England and Germany. As the guests seated themselves at the table, a flashlight was taken of the gathering, numerous flags being simultaneously released. The prevaling color was naturally mauve, each guest wearing a tie of this color. The handsome menu cards were enclosed in a cover of this color with a bronze embossed photograph of Sir William Henry Perkin and the following inscription in gold: "Dinner in honor of Sir William Henry Perkin by his American friends, to commemorate the 50th anniversary of his discovery of the dyestuff 'mauve,' on Saturday the sixth of October, One Thoustand Nine Hundred and Six, at Delmonico's." The menu throughout was printed in mauve ink. At the plate of each guest in addition to the menu card was found a copy of the patent issued by the English Government to Sir William Henry Perkin, containing the specifications for producing a new coloring matter for dyeing with a lilac or purple color, stuffs of silk, cotton, wool or other materials, bearing the date of August 26, 1856, and sealed Feb. 29, 1857.

During the addresses Chairman Chandler said he wished to thank every one who had so heartily co-operated in making possible the Perkin Jubilee Celebration, among others mentioned being Walter F. Sykes & Co., who furnished the mauve color, which is the product of the St. Denis Dyestuff and Chemical Company, France, one of their consignors, which was used in the coloring of the ties. Also Heller & Merz, who made and dyed the paper used for the cover of the menu card and also dyed the silk cord used in tying the same. Also the United States Finishing Company, who furnished the ties.

The Committee of Fifteen was:

Chas. F. Chandler, chairman, Columbia University; Adolf Kutroff, treasurer, Continental Color and Chemical Company; H. Schweitzer, secretary; Marston T. Bogert, Professor of Organic Chemistry, Columbia University; H. Fries, of Fries Bros., manufacturers of essential oils and synthetic chemicals; W. F. Hillebrand, president of the American Chemical Society; W. J. Matheson, vice-president Cassella Color Company; Wm. McMurtrie, vice-president Royal Baking Powder Company, past president American Chemical Society; H. A. Metz, president H. A. Metz Company; A. Merz, American Ultramarine and Globe Color Works; Wm. H. Nichols, president General Chemical Company, past president Society of Chemical Industry; George A. Prochazka, president Central Dyestuff Company; G. Simon, president Heyden Chemical Works; I. F. Stone, president National Aniline and Color Company, and Maximilian Toch, of Toch Bros.

At the reception preceding the dinner the guest of the evening was presented to the gathering by Prof. Chandler and Dr. Hugo Schweitzer. Promptly at 7 o'clock the guests assembled in the banquet room, and Prof. Chandler, presiding, introduced the Rev. S. Parkes Cadman, D.D., who offered grace.

The menu was:

Oysters.

Clear Green Turtle Soup.

Radishes. Olives. Celery.

Terrapin a la Maryland.

Saddle of Lamb Aromatic.
Brussels Sprouts with Chestnuts.

Grouse.

Bread Sauce. Currant Jelly.
Lettuce and Celery Salad.

Nesselrode Pudding.
Assorted Cakes.
Cheese. Coffee.

L. Roederer Carte Blanche.
Perrier Jouett Brut.
Pommery Sec.
Clos de Vougeot.
White Rock.
Apollinaris.
Liqueurs.

POST-PRANDIAL ENJOYMENT.

Immediately after the dinner Chairman Chandler rose and spoke feelingly of the pleasure it was to chemists, dyestuff and color manufacturers and their friends to have with them their honored guest and in this small way to do him honor for his great achievement. He also mentioned the generous hospitality that had been extended to the American guests at the meeting of the Society of Chemical Industry held in London last year, of which Sir William Henry Perkin was one of the committee in charge. Mention was made of the general fund that was being solicited for a chemical library which would be installed at the Chemists' Club, to be known as the Perkin Library. It is intended to be a reference and circulating library, covering the entire field of theoretical and applied chemistry, and is to contain duplicate sets, one of them to be used for circulation among American chemists. The speaker declared that at present there was not a complete library in the United States, and that it had been decided to establish this instead of a scholarship.

The chairman then proposed a toast to the President of the United States, King of England and Emperor of Germany. This was drunk standing, and the orchestra played "The Star-Spangled Banner," "Rule Britannia" and "Die Wacht am Rhein."

The Hon. Patrick F. McGowan, President of the Board of Aldermen, who represented his honor, George B. McClellan, was introduced, and responded to the toast, "Welcome to Our Distinguished Guest by the City of New York." He said:

"On behalf of His Honor, the Mayor, the Hon. George B. McClellan, and the four millions of people of the city of New York, I extend to you a most cordial welcome. We are glad of the opportunity to demonstrate to you and your associates that hospitality is not confined to England and Englishmen, and this splendid gathering, assembled to do you honor, is but a slight evidence of our esteem and American hospitality. We congratulate you upon your success and rejoice in your good fortune.

"When our chemists and scientific men went to England they were met with open arms, they were feted and feasted, and upon their return were loud in their praises of the treatment they received. And this reminds me of a story. During the late unpleasantness between the North and the South an Irishman, in his search for something good to eat, captured three Confederate soldiers and marched them into camp, where he turned them over to the captain. The officer was rather pleased, and said to him: 'Private O'Reilly, how did you do it?' O'Reilly, saluting his superior, said: 'Begorra, sor, I surrounded them.' Now, the visitors from the United States on the occasion just referred to were surrounded by good feeling and good fellowship.

"Sir Henry Perkin, our hearts are in our welcome, and in conclusion permit me to quote the words of the poet, which so completely express our sentiments:

"'Come in the evening or come in the morning,
Come when you're looked for, and come without warning;
A welcome and kisses you'll find here before you,
And the oftener you come the more we'll adore you.'"

Dr. Hugo Schweitzer, whose arduous work as secretary of the Committee of Fifteen was generously recognized by the company, was the next speaker. The chair in introducing him stated that all the success of the function was due to his untiring efforts. His address was followed closely by all present. Dr. Schweitzer said:

HISTORY OF DISCOVERY.

I need hardly assure you how highly honored I feel to be permitted to speak here to-night. Yet I am fully aware that the committee did not select me because it considered me the most competent of our chemists to respond to this subject, but because so many of our colleagues refused to be heard, fearing the arduous labor of condensing the vast material within the limits of a fifteen-minute address, when fifteen hours could be devoted to it with much less difficulty and work. With me, however, it was a labor of love, and I accepted with pride and pleasure, inspired by the wonderful development of this industry in which I have been an attentive watcher and a modest co-worker, it being just twenty years since, in collaboration with Professor Bernthsen, I began the investigations which finally culminated in the discovery of the constitution of the dyestuffs of the safranine series. Above all, I have been inspired in my task by the genial personality and refined modesty of our distinguished guest, Sir William Henry Perkin, with whom I had the pleasure of becoming more intimately acquainted during last year's meeting of the Society of Chemical Industry in London. It must be a sincere source of congratulation to us that he has braved the perils of a long ocean voyage to honor us with his presence at our celebration of the semi-centennial of the coal tar industry, initiated by the discovery of Perkin's mauve. Only fifty years ago, while engaged in research, having for its object the artificial production of quinine, Perkin, then an 18-year-old assistant of Hofmann, obtained a muddy, dark precipitate, from which he first endeavored to extract certain colorless crystalline substances which might adequately explain the reaction under observation. One day, however, the thought occurred to him to utilize this colored precipitate itself for the dyeing of silk. It is hard to realize today what an epoch-making idea it was at that time to dye fabrics with a substance evolved in the laboratory and having no relation whatever to the dyestuffs then known. It was truly the spark of genius which led Perkin to investigate the dye-

(*Continued on page* 22.)

The report of the Perkin Jubilee is printed in mauve ink, the color which was discovered by Sir William Henry Perkin, and which was the basic cause for the celebration in his honor.

HISTORY OF DISCOVERY.

SIR WILLIAM HENRY PERKIN TELLS STORY OF MAUVE.

Interesting Details Regarding Progress and Development of His Scientific Investigations—Inception of Coal Tar Industry and Difficulties Surrounding Its Enlargement—Various Lines Which Have Been Benefited.

SIR WILLIAM HENRY PERKIN was introduced, and as he arose was received by cheers and a rising salutation. He said:

It is now twenty-two years since I visited the United States. I was attending the first British Association meeting that was held at Montreal, and then extended my visit to Yellowstone Park, returning by Chicago, Washington, Baltimore, Philadelphia, New York and Boston back to Montreal. At that time I certainly never anticipated that in twenty-two years' time I should be in this city at a jubilee celebration of the discovery of the Mauve and foundation of the coal tar color industry. It was indeed quite unexpected, and a matter of surprise to me when I heard that an international celebration was about to be inaugurated in my own country, which took place in July last. This included nations on both sides of the world, as you sent Dr. Backeland as a delegate to represent America, but it was a great surprise to find that you were not satisfied to merely join the English Jubilee, but had determined on having a jubilee celebration of your own in this city, which I should be invited to attend. I can only say how greatly honored I feel and how gratified I am at being present here to-night at this banquet and meeting so many fellow workers in the field of science and other friends. From the very cordial and friendly reception you have given me I do not feel at all strange in coming amongst you, and especially as I realize how closely we are related to each other by race and language, which naturally engenders a strong feeling of sympathy between us, a feeling which has been so heartily manifested this evening by the warm welcome given by the city of New York through the Hon. Patrick McGowan, president of the Board of Aldermen, and also in a practical manner by the presentation given by Dr. Nichols, Mr. Kuttroff and Mr. Hillebrand.

The foundation of a medal bearing my name to be annually awarded to an American chemist I feel to be a great honor, especially as I have all my life insisted on the importance of research work, and if this medal should help to encourage and stimulate some chemist to increased activity in this direction, this jubilee celebration will have accomplished a valuable result. And when we consider the advantages of a very large research fund we cannot but believe that this will be the case. I thank you very sincerely for presenting me with this beautiful medal, the first that has been struck, which I value very highly.

THANKS AND APPRECIATION.

With respect to the beautiful personal token you have presented to me, I scarcely know how to express myself. I am sure it will be greatly valued not only by myself, but by Lady Perkin and my family. It has the merit of not only being beautiful, but also very useful, and it is a very suitable gift for a total abstainer.

I appreciate very much the honor the American Chemical Society has done me in electing me one of its honorary fellows and presenting me with its certifi-

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Wellcome Library

cate of membership this evening. I am very pleased indeed to have my name associated with this important society, the value of which I gauge from my knowledge of the help the London Chemical Society has been to me, and of which I have this year also completed my jubilee of membership.

I very heartily thank Dr. Nichols, Mr. Kuttroff and Dr. Hillebrand for all their kind and generous remarks in reference to myself when presenting me with these gifts.

That this Jubilee should also have another important object in view, namely, the foundation of a reference and circulating library for science, is also a great satisfaction to me, as it may be the means of not only affording useful information to scientific workers, but also of stimulating research.

I am very glad that Prof. Chandler is the president to-night. I have known him for a long time, and we must all admire the indomitable perseverance with which he has worked for the cause of chemistry in this city for now over forty years without flagging, and for all the good work he has done. His position as chairman on this occasion is particularly fitting, because of the various ways in which he has been connected with the coal tar industry, and his acquaintance with the great works in which the colors are made, and I also know the very hearty and active part he has taken in connection with this celebration. I thank him also for the kind th ngs he has said in reference to myself.

We have all listened with great interest to the remarks of Dr. Schweitzer, who is not only practically connected with the coal tar matters, but has also done good scientific work in connection with them. I thank him for all the kind references he has made to me. And I take this opportunity of thanking him and all other members of the committee for the pains they have taken to make my visit to this country so extremely pleasant and enjoyable not only to myself, but also to Lady Perkin and my daughters. It is a landmark in our lives to which we shall always look back with pleasure.

I have no doubt that some of you will have read the particulars of the London celebration and what I said on that occasion, and this makes it difficult for me to address you, and if I repeat much of what I said then, I must claim your indulgence, because one cannot but state the things which have occurred in one's lifetime; they cannot be varied. As I expect that many of you, however, may not be so well acquainted with the history of the coal tar color industry and the mauve dye which was its starting-point, as people are in the old country, I thought that you might like me to give a brief account of it, especially of its early days; but even to do this is difficult in the time at my disposal, and moreover, as I shall have to speak about myself, it would have been more agreeable to me if some one else could tell the tale. To begin, it may perhaps, first of all interest you to know something of my early days and how I became a chemist.

HISTORY OF LIFE'S WORK.

As long as I can remember, the kind of pursuit I should follow during my life was a subject that occupied my thoughts very much. My father being a builder, the first idea was that I should follow in his footsteps, and I used to watch the carpenters at work and also tried my hand at carpentering myself. Other things I noticed led me to take an interest in mechanics and engineering, and I used to pore over an old book called the "Artisan" which referred to these subjects and also described some of the steam engines then in use, and I tried to make an engine myself and got as far as making the patterns for casting, but I was unable to go any further for want of appliances. I had always been fond of drawing and sometimes copied plans for my father, whose ambition was that I might be an architect. This led me on to painting and made me think I should like to be an artist, and I worked away at oil painting for some time. All these subjects I pursued earnestly and not as amusements, and the information I obtained, though very elementary, was of much value to me afterward; but when I was between twelve and thirteen years of age a young friend showed me some chemical experiments, and the wonderful power of substances to crystallize in definite forms, and the latter especially struck me very much, with the result that I saw there was in chemistry something far beyond the other pursuits with which I had previously been occupied. The possibility also of making new discoveries impressed me very much. My choice was fixed, and I determined if possible to become a chemist, and I immediately commenced to accumulate bottles of chemicals and make experiments. About this time I changed my school and was sent to the City of London School, and to my delight found that lectures on chemistry and natural philosophy were given there twice a week during the dinner interval. These I attended, and not long afterward the lecturer, seeing the great interest I took in the science, made me one of his lecture assistants, my duties being to prepare the experiments, arrange the table and assist at the lectures. This was a great lift to me, and I daily used most of the interval for dinner, and not unfrequently all, but the abstinence from food this caused did me no harm, as nearly all of us eat too much. This interval was the only time I had for fitting up apparatus and preparing for these lectures. The lecturer was Mr. Thomas Hall, B.A., one of the class masters, and he was very kind to me and helped me in every way. My father was disappointed at my choice, and the outlook for chemists was indeed very poor in those days, and naturally that was a matter that weighed with my father; but Mr. Hall had several interviews with him and eventually I was allowed to follow my bent, and at the age of fifteen I left school and entered the Royal College of Chemistry in London, where Dr. Hofmann was professor.

Under Dr. Hofmann's able instructions I soon got through the ordinary course of qualitative and quantitative analysis and also gas analysis; this I looked upon only as a preliminary part of my chemical acquirements and not, as many used to and some still do, as a full equipment. Research was my ambition and under the professor's guidance this was entered upon and the first investigation completed when I was seventeen. I then became honorary assistant in Dr. Hofmann's research laboratory and helped to carry on his scientific inquiries, and in this way I quickly acquired a considerable insight into the chemical science of that day, as well as experimental experience. My time being much occupied with the professor's work, I had little opportunity of carrying on research on my own account.

PRELIMINARY WORK.

I discovered "mauve dye" during the Easter vacation of 1856. I showed this dye to some of my chemical friends, who thought it might be valuable, but its evident costliness and the difficulties of preparing aniline for its production on a large scale made the probability of its proving of practical value very doubtful. At this time aniline was a very rare product, only found in a few research laboratories, and could not be purchased. Having obtained an introduction to Messrs. Pullar, of Perth, the well-known dyers, some pieces of dyed silk were sent to them, and they reported: *"If* your discovery does not make the goods too expensive it is decidedly the most valuable that has come out for a long time." This report was very satisfactory except the *"If"* it commenced with. During the summer vacation, and with the help of my brother, Mr. T. D. Perkin, larger experiments were made, and consequently large quantities of coloring matter obtained, and it was then decided to patent the process, but a difficulty arose. I was but eighteen years of age, and it was questionable whether a patent could be granted to any one under twenty-one—(a minor). Counsel's opinion had therefore to be obtained, and this was to the effect that a patent being a gift from the Crown, the matter of age did not affect the grant. Further experiments were then made on dyeing and calico printing, and although the colors were admired, that terrible *if* respecting the cost was always brought forward, besides other questions. Nevertheless, I became persuaded in my own mind of the importance of the dye, and, as a consequence, I gave up my position as assistant to Dr. Hofmann that I might follow up the subject, but at this he was annoyed, probably thinking I was taking a false step. I was also much afraid that by entering into this technical pursuit my research work might be prevented, but I determined that so far as in me lay this should not be the case.

COMMENCES NEW INDUSTRY.

But the difficulty in starting this new industry was that no one was willing to come forward with the requisite capital, because they were not ready to risk it on such a new and untried product as this dye. My father, however, although he had been disappointed at my becoming a chemist instead of an architect, nevertheless had so much confidence in my judgment that he very nobly risked most of the capital he had accumulated by a life of great industry by building and starting works for the production of this mauve dye. Had it not been for this generosity on his part, for which I have always felt very grateful, probably I should not have been able to start this industry. My father and brother joined me in this undertaking, and I feel that my success was largely due to their collaboration. Time would fail me to enter into all the difficulties that beset the establishment of this "unique" industry, not only in having to invent suitable plant, but also to obtain even the raw material which was not then made of a definite quality. The processes were quite different in character to those in existing chemical industries. The coloring matter also when made was quite different to ordinary dyes in its properties and methods for its application, as a dye had to be discovered, and this consumed much time. In fact, it was all pioneering work. Nevertheless, the mauve was supplied for silk dyeing as early as December, 1857.

I have mentioned these particulars because the production of this new color and the practical proof of the possibility of manufacturing it commercially was the foundation of the coal tar color industry. When the mauve was seen to be a success, of course every one commenced experimenting with aniline, and three years after its discovery magenta was discovered by M. Verguin in France. None of the difficulties I have mentioned were encountered in the manufacture of this dye; the way was clear and all the processes for the application of the mauve were equally suitable for the magenta, and, moreover, none of the first prejudices in reference to such an innovation as the mauve any longer existed.

Other coloring matters were then discovered by myself, and in France by Messrs. Girard and Delaine and then by Dr. Hofmann, in England, many of which were derivatives of magenta. These were produced not only in France, but largely in England by Messrs. Simpson, Maule and Nicholson; they were also made to some extent in Germany and Switzerland, and very soon dyes of all the colors of the rainbow were obtained from commercial aniline and the industry made very rapid progress.

In 1868 Grabe and Liebermann commenced an investigation on alizarine, the natural coloring matter of the madder root, from a purely scientific point of view; this led to the remarkable discovery that this coloring matter is related to a coal tar product called anthracene, and they also succeeded in producing it from this product. This was the first natural coloring matter which had been produced artificially. Their process, however, was not suitable for the production of this coloring matter technically. Having in my research work studied anthracene and some of its products, I endeavored to find a practical process for the formation of alizarine, and after a time succeeded in finding two suitable methods for its production on the large scale. Caro, Grabe and Liebermann quite independently also discovered one of them. I and my brother then took up its production at our works (my father having died previously), but many difficulties were encountered, one being that of obtaining anthracene which was not then a commercial product, but after visiting most of the tar works in England and instructing the tar distillers and agreeing to take what they could make, a supply was soon obtained in all different states of purity, which quickly increased. In the meantime the difficulties of the manufacture were overcome, and we were soon able to commence supplying alizarine to the Turkey red dyers. Our output rapidly increased, and this artificial coloring matter has now become one of the most important of the coal tar colors and has superseded the natural dye, so that the cultivation of the madder root has practically ceased. In the year 1873 the demand for alizarine had so increased that we felt that it would be necessary to enlarge our works two or three times to meet the demand. My brother and I, however, did not care to undertake this great responsibility. We therefore sold our works, hoping our successors would follow up the matter.

This ended my connection with the color industry from a manufacturing point of view. After this I occupied myself with scientific research.

ARTIFICIAL INDIGO PRODUCED.

One of the most remarkable developments of the industry has been the artificial production of indigo, and curiously the first process for its manufacture discovered by Prof. Baeyer was dependent upon its success on the method of producing cinnamic acid, discovered in my purely scientific investigations, and this dye is now manufactured so cheaply that the cultivation of the indigo plant has been discontinued in many parts of India.

This important industry has also had a marvelous influence on the development of science itself. Its wonderful growth has also, as a matter of course, created not only directly, but indirectly an immense amount of employment for men of all classes, especially the working classes, which cannot be gauged, and although America has not become a manufacturing center for the production of these dyes, no doubt many thousands of American workers are engaged in the applications. That this industry which I was permitted to found should have led to this result is a source of pleasure to me, because the final result of our work should be the benefit of mankind.

You have been so good as to honor me by having this jubilee in remembrance of the part I have taken in connection with this coal tar color industry, and whilst I am thankful that I had to do with its foundation and early development, yet I feel that the part I have taken is indeed small when compared with the labors of the army of scientific men and others both inside and outside the color works, who have advanced it to its present condition. At the same time it is very gratifying to me to receive all the generous and kindly expression of feeling you are manifesting, and I thank you very heartily. But what have I that I have not received? It is not therefore for me to boast (and I feel that I have but imperfectly used my opportunities). I therefore can only say in reference to the successes which have attended my efforts: Not unto me, O Lord, not unto me, but unto Thy great Name be all the praise."

HONOR THE DISCOVERER.

(*Continued from page* 20.)

ing properties of that dark-colored precipitate which would have been cast away by any other scientist of that period, and particularly by his master, Hofmann, who objected to experimenting with anything which did not crystallize and who had at that time a strong aversion to working with substances which were colored. For the latter, when produced in reactions, were generally regarded as secondary products, and every endeavor was made to get rid of them, so that the other substances associated with them might be examined.

But however great the discovery of mauve, and however much we must admire the courage of the youth who undertook its technical production, yet these steps were only trivial incidents in the immense revolution brought about by Perkin's genius. The greatest obstacles encountered by him, and the most difficult task to be performed, was when he attempted to sell the color to dyers and printers. At that time men of this class worked by the rule of thumb with secret recipes, mostly inherited from their forefathers, and their formulæ, although applicable to natural colors, were not suitable for mauve. Thus Perkin and his associates had to prepare new directions for dyeing and printing and to induce those ultra-conservative dyers to adopt the new methods. It has been almost forgotten that Perkin was the first to introduce the method of dyeing silk in a soap bath which is commonly employed to-day for all artificial dyestuffs, and that he and Pullar first made use of the mordanting of cotton with the insoluble, inorganic compounds of tannin.

Thus the introduction of mauve completely changed the art of dyeing and printing, simplifying the processes and substituting for the old-time formulæ the scientific recipes furnished by the color manufacturers of the present day. After Perkin had thus removed the obstacles in the path of practical application, it became comparatively easy to introduce other coal tar colors.

But Perkin also paved the way for the discovery of the later coal tar colors by creating commercially aniline, and benzol, which up to his time had only been laboratory curiosities. Of the three methods available for obtaining aniline he selected as the most promising the reduction of nitrobenzol, made by nitration of coal tar benzol, and the production of aniline from this source led, shortly after the discovery of mauve, to the discovery of magenta, which opened up a new and immense field for this industry. Aniline from benzol was later found to contain toluidice, which is not present in aniline from indigo or that obtained directly from coal tar, and Perkin truly said in a lecture delivered December 7, 1868: "Had the aniline contained in coal tar or the aniline obtained from indigo been employed for the preparation of mauve, instead of that prepared from commercial benzol, magenta and its train of colored derivaties would in all probability have remained unknown to the present day from the simple fact that magenta cannot be produced from pure aniline, a second body being also required."

EVOLUTION OF INDUSTRY.

The industry thus initiated with a violent impetus soon showed its revolutionizing tendencies and its vitalizing power in almost every branch of human endeavor. To-day about 2,000 individual dyestuffs are known, giving the whole range of the colors of the rainbow, and complying with every demand of taste, fashion and stability. They surpass in beauty and brilliancy the colors supplied by nature, and, contrary to the impression prevailing among the public, the shades obtained with some of them are faster to the influence of time, light and chemicals than the fastest which nature produces.

The greatest triumphs of this branch of the industry was the artificial production of alizarine and indigo, and in the technical production of the former our distinguished guest has played a prominent part, solving the problem of its manufacture simultaneously with Graebe and Liebermann, whose English patent antedates that of Perkin by one day.

Coal tar colors, however, are not only used for the dyeing of textile fibers, like wool, silk, cotton, linen, jute, ramie, etc., but for a host of other materials.

The lady's hair is gray, or of a hue not fashionable at the time—coal tar colors will assist her in appearing youthful and gay. In eating the luscious frankfurter, your soul rejoices to see the sanguineous liquid oozing from the meat—alas! coal tar colors have done it, and friend Wiley can prove it. The housewife selects a bright, green broom, on account of its anticipated good wearing quality, but finds, to her sorrow, that coal tar colors furnished the freshness. The product of the hen is replaced by yellow coal tar colors in custard powders, and butter is colored yellow when the dyestuff laboratory of the cow is on a strike. Leather, paper, bones, ivory, feathers, straw, grasses, are all colored, and one of the most interesting applications is the dyeing of whole pieces of even the bulkiest furniture by dipping them in large tanks containing the dyestuffs, which transforms the wood into walnut, mahogany, at your command, as carried out in our big factories in Grand Rapids, and elsewhere.

As coal tar colors are used in this enormous scale, so they are also employed in a liliputian manner, for staining specimens for examination under the microscope, enabling us to detect and identify bacteria, the finest nerve-ends and other minute elements of animal tissues, and by means of such staining methods, especially with methylene-blue, Koch discovered the bacillus of tuberculosis and cholera, and initiated the modern battle against preventable infectious diseases. In reciprocation for the excellent reagents supplied him by the dye industry, the histologist brought about the discovery of a new and very important class of colors, and as this instance is one of the most striking demonstrations of the interdependence of practice and theory, I shall relate it to you. In 1886 Ehrlich observed that methylene-blue and some of its congeners were the only colors which stained the living nerve tissue, and in order to determine whether this remarkable property was due to the peculiar constitution of methylene-blue or to the presence of sulfur, he found it desirable to experiment with a substance analogous to methylene-blue, but in which the sulfur was replaced by oxygen. He applied to Dr. Caro, requesting him to assist him in his work by furnishing him the material necessary for his experiments.

BIRTH OF COAL TAR.

As a substance of this constitution was then unknown, it was made to order, and in the course of this research, the valuable class of rhodamine colors was discovered. Thus experiments with nerve tissues gave birth to the manufacture of coal tar colors of the greatest importance in the textile industries.

The dyestuff methylene-blue and some others are also of great value as internal remedies, and the former is strongly recommended by one of the greatest American authorities for the relief of pain in that horrible disease, cancer.

The medicinal properties of the coal tar colors lead us to that branch of the industry which is next in importance, namely, the coal tar remedies. Incidentally, it may be mentioned here that before these so-called synthetics were introduced, Kolbe had succeeded in 1874 in artificially preparing from coal tar salicylic acid, which up to that time was exclusively a product of nature. Salicylic acid has been, and is still to-day, used extensively as a remedy against rheumatism.

The industry of synthetic drugs owed its origin also to the efforts of chemists to produce quinine artificially. Experiments had shown that by decomposing quinine a substance called quinolin was formed, and the latter was likewise found to exist in coal tar. It was then assumed that quinine must in some way be derived from quinolin, and that perhaps other derivatives of quinolin might possess properties similar to quinine. This trend of thought led to the discovery of the quinolin derivatives, thallin and kairin, which, however, were soon discarded on account of their drastic action and to possess only historical interest.

In 1883 Knorr, starting from erroneous deductions concerning the constitution of quinine, and also misinterpreting the constitution of some of the products obtained in his research, inspired the pharmacological study of a substance afterward called antipyrin. This proved to be of the greatest value in medicine and was the first successful synthetic coal tar remedy in the market.

Shortly after the introduction of antipyrin a fortunate accident gave this modern art an unexpected stimulus, diverting the investigation from quinine and uncovering an entirely new field. Kahn and Hepp, two physicians connected with the Strassburg University, were on terms of friendship with a chemist of the Hoechst Works, where Knorr's antipyrin was being manufactured, and requested him, in 1886, to send them some chemically pure naphthalene, which they desired to use internally in the case of a patient suffering with some skin disease. They received the substance, and on administering found that while it failed to exhibit the expected effect, it promptly reduced the existing fever. When the supply of naphthalene was almost exhausted, they wrote for a further quantity; but, to their great astonishment, the second supply, unlike the first, did not manifest any antipyretic action, and on comparing the two, they soon discovered that a mistake had occurred somewhere. An investigation showed that when the first request was received the laboratory boy was directed by the chemist to fill a bottle with naphthalene and mail it to his friends, but through an error some acetanilid was sent instead, while the second time the chemist himself filled the bottle correctly. Thus, through an accident, acetanilid was introduced into medicine, a remedy which to-day is used by the ton as an antipyretic and antineuralgic, and through the irony of fate the most powerful competitor of antipyrin was discovered as the result of a mistake made in the very factory which was realizing enormous profits from the production of antipyrin.

REMEDIES DISCOVERED.

When it was recognized that the acetylization of an amine produced a body of so much value, this process was tried with many amines and other suitable substances, and in consequence such important remedies as phenacetin were obtained, while by substituting lactic acid for by means of amidoacetic acid, a drug acetic acid, lactophenine was prepared, and named phenocoll.

After chemical researches had shown that the active principles of vegetable purgatives, such as rhubarb, senna, cascara sagadra and aloes were anthraquinone derivatives, synthetic preparations of this class which therefore are closely related to the alizarine colors, are now brought into the market. These new remedies have the advantage over the crude drugs of greater uniformity of action and exactness in the dosage.

The active principle of the suprarenal gland first isolated and investigated upon by an American scientist, a substance of surprisingly simple chemical constitution, has been obtained from coal tar, and it is said that this synthetic product is now marketed and from experiments carried out in Europe and in the large works of Parke, Davis & Company in this country, we may expect that derivatives of this body will soon appear which will be even superior in their pharmacological effect to nature's product.

About the time that the first synthetics were brought out a very curious chemical was discovered also by American ingenuity, which is to-day not only used for medicinal, but also on a large scale for industrial purposes. I refer to saccharine, a substance derived from coal tar, which is 550 times sweeter than sugar, and is the first representative of the class of artificial sweeteners. It may be of interest to relate an instance showing how purely theoretical investigations may lead to the building up of an important industry.

Dr. Fahlberg, working under the directions of Prof. Ira Remsen in Johns Hopkins, was experimenting with coal tar derivatives from a purely scientific point of view. Before leaving the laboratory one evening he thoroughtly washed his hands, and was under the impression that he had taken every pains in doing so. He was therefore greatly surprised on finding that, during his meal, when carrying bread to his mouth, the hands had a sweet taste. He suspected that his landlady had unintentionally sweetened the bread and called her to account. They had a little discussion, from which she emerged the victor. It was not the bread that tasted sweet, but his hands, and, much to his surprise, he noted that not only his hands but his arms had a sweet taste. The only explanation that he could think of was that, notwithstanding the thorough washing, he had brought some chemical along from the laboratory. Rushing back to it and carefuly investigating the taste of all the goblets, glasses and dishes standing on the working table, he finally came across one whose contents seemed to possess a remarkably sweet taste. *Thus was made this remarkable discovery.* What remained to be done was accomplished by later researches with the substance. He found very soon that saccharin, as the product was named, when diluted assumed the taste of cane sugar. In water solution, for instance, its taste was as pleasant as sugar water. The product seemed to be worthy of utilization, provided its other properties were not objectionable.

Physiological experiments were now made on animals, and then on human beings, which showed that it was eliminated undecomposed, and that therefore the human organism behaved indifferently toward the substance. Furthermore, as no perceptible disturbance of the general condition could be observed, it could be assumed that saccharin had no deleterious influence whatsoever upon the general health.

NEW FIELDS OPENED.

With the introduction of this artificial sweetener a new industrial field was opened up, and the significance of this discovery can be easily imagined when you consider that four pounds of this material are equivalent in sweetening power to one ton of cane or beet sugar. It was soon manufactured on such a large scale that it seriously threatened the beet sugar industry of the continent, and as the latter was of much more economic importance than the production of saccharin, laws were enacted which prohibited the industrial use of the sweetener as a substitute for sugar, permitting its employment solely for medicinal purposes, the German Government even going so far as to make a sort of state monopoly of the manufacture of this material.

Still another industry has undergone vast changes through Perkin's discoveries, and since the beginning of the coal tar epoch—the manufacture of artificial perfumes. Nitrobenzol, under the name of Mirbaneoil, was in the market as an artificial oil of bitter almonds even before Perkin's Mauve. It was used to some extent for scenting soaps. To-day, a great

DINNER IN HONOR OF SIR WILLIAM HENRY PERKIN, DELMONICO'S, NEW YORK, OCTOBER 6, 1906.

variety of synthetic perfumes are manufactured. The odor of musk is successfully imitated by a nitrated hydrocarbon derived from coal tar, the odor of violets, of roses, of jasmine, of heliotrope, is reproduced artificially by synthetic substances, and the favorite American flavor, the oil of wintergreen, is manufactured from coal tar. And in this art also the hand of the master is seen in what is called the Perkin Reaction, through which he first succeeded in preparing from coal tar, coumarin and cinnamic acid.

The singular correlation of all those coal tar products appears from the fact that the odoriferous principle of jasmine is derived from the same mother substance which furnishes synthetic indigo, namely, anthranilic acid.

Between the products giving the sweet odors of flowers and the death dealing explosives there would seem to be a broad chasm, but not for the synthetic coal tar chemist. In fact, the same nitrobenzol which was the first artificial perfume, is used to-day with nitroglycerin as a safety explosive. The latter has the disadvantage of congealing when exposed to the cold and then becoming highly dangerous; the admixture of nitrobenzol keeps its liquid at very much lower temperature. Trinitrobenzol and its homologues especially trinitrocarbolic acid, or picric acid, are to-day employed as safety explosives by the miner and in proper mixtures as smokeless powder by the armies of the civilized world.

While coal tar preparations thus destroy life, so they likewise sustain life, for by the use of salicylic and benzoic acids, both products of nature, but now derived chiefly from this source, it becomes possible to preserve the canned foods so indispensable to the soldier, sailor and explorer.

USES OF COAL TAR COLORS.

In conclusion, mention must be made of the use of coal tar colors and preparations in the reproductive arts in which they play a most important part. Inks for printing and writing are made with coal tar colors, and in photography coal tar preparations are now used almost exclusively for the development of the latent picture on films, plates and paper. By the addition of certain coal tar colors to the photographic emulsion the latter becomes extremely sensitive to light and can then be used for instantaneous exposures, as in snapshots ,and thus Kodak fiends are the direct offshoots of the coal tar industry. By means of coal tar colors, even one of the greatest of all problems, photography in natural colors, has been realized.

Curious to relate, with all these successes to its credit, the problem which has occupied the attention of master minds now for almost a century, and which was the incentive of Perkin's research, so fruitful in other fields, the artificial production of quinine remains unsolved up to the present day.

While thus new arts were constantly developed, the chemical industries, existing at the time of Perkin's discovery, were also eminently benefited. The production of aniline required at once large quantities of sulfuric and nitric acids for the nitration of benzol, and the demand of the new industry for highly concentrated sulfuric acid gave to the world the contact process in which the sulfuric acid gas, formed, for example, in roasting zinc and iron pyrites, which heretofore was allowed to escape and then vitiated the atmosphere and destroyed vegetation, is converted into sulfuric acid by the oxygen of the air. The manufacture of alizarin consumed enormous quantities of caustic soda. Bromin and iodine became staple articles of commerce. The electrolysis of salt solution was economically perfected, and together with the contact process and the liquefaction of chlorine is employed on an immense scale for the synthesis of indigo. The experience gained in electric methods is being applied to the problem of utilizing the nitrogen of the air, and to judge from past successes it will not be many years before the Badische Anilin and Soda Fabrik, in whose laboratories experiments in this direction are being conducted, will bring in the market nitrates, nitrites and nitric acid made from atmospheric nitrogen, instead of Chile saltpeter, the supply of which is calculated to last no longer than about twenty years. And as Chile saltpeter is indispensable in agriculture, especially in the raising of cereals, its artificial production in the manner indicated will remove the anxiety expressed by writers on economics concerning the difficulty of feeding an ever increasing population owing to the gradual exhaustion of the soil.

The distillation of coal tar itself was changed in every respect to comply with the new development. All its by-products are utilized, and one of them, sulfate of ammonia, is produced so economically that it is commonly employed as a fertilizer.

The coal-tar industry gave us our modern chemical institutes, the wonderful equipments of which were first utilized in the laboratories of the factories, and above all it gave us the intimate co-operation of technics and science which is in fact at the root of all this magnificent success.

The world cannot spare such an extraordinary man. May his life be spared to us for many years to come and may it be replete with health and happiness.

PERKIN MEDAL PRESENTED.

Chairman Chandler then introduced Dr. William H. Nichols, past president of the Society of Chemical Industry, and president of the General Chemical Company, who presented to Sir William Henry Perkin the gold medal known as the Perkin Medal, which is its first impression. A reproduction of the same appears in another column. Dr. Nichols said:

Rising to perform the agreeable duty which has been allotted to me, I feel that even if unlimited time were accorded me, I would be unequal to the task. What then shall I say in a few minutes which will in the most modest fashion do justice to this occasion? It has been said of a certain man that what he did not know would enrich a library. It may be said of our guest that on account of what he has done, together with what has grown out of it, would fill a thousand libraries, and yet, like John Brown's soul, "it still goes marching on." It is true that matter is indestructible; but so are great conceptions, and in a much broader and deeper sense.

Sir William, we are here to-night to honor you for your quiet life of unostentatious work. For half a century you have been patiently building—yes, better than you knew—with little thought of public reward or private gain, until at last you have come to your own. Honored by your king, by your fellow-chemists, by the world, you may pass down the hillsides toward the setting sun with a clear conscience, and the assurance of the reward of him who has not been faithless to his trust. You have seen the dawn of the golden age—the age of chemistry—that science which by synthesis will gather together the fragments and wastes of the other dynasties, and build for the world a civilization which will last until the end.

Your American friends, therefore, are proud to recognize your works, and have in various ways attempted to show you how they feel, and at the same time make use of your example for the encouragement of others for all time. One of these ways has been the establishment of the Perkin medal, to be given annually to the American chemist who has most distinguished himself by his services to applied chemistry. I hold in my hand the first impress of this medal, which it is my privilege to bestow upon you. On one side is a good likeness of yourself. On the other the words, "To Sir William Henry Perkin, from his American friends, for his distinguished services to the world," with the date. It is beautiful, like your character. It is many-sided, like your mind. It is of pure gold, like yourself. May you live long to enjoy its possession, and the pleasure of seeing the bestowal of many of its successors on worthy strivers after truth.

SILVER SERVICE GIVEN.

Adolf Kuttroff, treasurer of the committee, was then introduced as the pioneer of the coal-tar industry in the United States. Mr. Kuttroff presented to Sir William Henry Perkin a tea service of eight pieces as a token of gratitude from his American friends. In presenting the service he said:

I have the honor to present to you, on behalf of your American friends and admirers, this service as a token of our esteem and in remembrance of this anniversary. It is a useful thing to be used every day, and one of its objects is to have you remember your many friends in this country every time it is set before you.

The several pieces have inscriptions to commemorate some of your important scientific work. One piece has the legend

"1856 Mauve 1906,"

this delicate and beautiful color, modest in its tone and soothing in its effect. With the discovery of this color you have planted a seed which has grown to be a very large tree, with extensive branches and luxurious foliage. It must be a great satisfaction for you to contemplate it. The extent at the present time of the industry which had its beginning with your discovery in 1856, is shown by the fact that over $15,000,000 are paid out annually for labor alone.

Another inscription is

"The Technical Production of Alizarine,"

an invention implying bold ideas of chemical possibilities and a high order of technical skill.

Another is

"Anthrapurpurine,"

one of the most important constituents of Artificial Alizarine. It gives a brilliant rose red, which has the astonishing property that the harder you soap it the better it looks.

Are these grand inventions not almost Providential? With the ever-increasing population, does it not become difficult to find food for all. Millions of acres of good land had to be utilized to furnish dyestuffs. As the result of your invention this land can now be used to raise crops. It required a good soil to raise madder and indigo, and this good land is now available for cereals.

Then there is the

"Perkin Reaction, Synthesis of Coumarin and of Cinnamic Acid."

The reaction which you discovered and which is known as the "Perkin Reaction" led to the synthesis of these important substances.

Another inscription is

"Constant Magnetic Rotary Power of Carbon Derivatives."

This is your more recent work. The announcement of your observations startled the scientific world. It is highly important in its results and testifies to the most profound investigation.

We express the fervent hope that you will use this service in good health for many, many years.

Dr. William Francis Hillebrand, president of the American Chemical Society, who was the next speaker, presented the guest of the evening an honorary membership in the American Chemical Society. Dr. Hillebrand stated that this society had a membership of over 3,000, and in June last unanimously agreed to confer this honorary membership and cabled this fact to him and had received his acceptance, but had deferred the presentation of the same until the present function. He extended a most cordial welcome to this country, and in closing gave to the guest the right hand of fellowship as a member of the American Chemical Society.

OTHER CONTRIBUTORS.

President Nicholas Murray Butler, of Columbia University, followed in an interesting speech which was received with great appreciation. The Rev. S. P. Cadman, D.D., responded to his introduction in a happy and felicitous vein. Prof. Herman Schumacher, Professor of Economics at the University of Bonn, who is now lecturing at Columbia as the first Kaiser Wilhelm Professor, was introduced, and in opening his remarks, stated that this was the first American banquet that it had been his pleasure to attend. He spoke very feelingly of the pleasure it gave him to be one of those to welcome Sir William Henry Perkin and do honor to his great work.

Chairman Chandler spoke of the regret it was to him and to all other chemists that Dr. Walker Gibbs, "the nestor of chemistry," was unable to be present owing to advancing years.

Dr. Ira Remsen, president of Johns Hopkins University, stated that his university was the first to establish an opportunity for chemical research. He added his tribute to Sir Perkin's work and proposed that they sing "Blest Be the Tie That Binds," and he extended to Sir Perkin an invitation to visit the university again, as he did on his previous trip to this country.

Professor Nernst, University of Berlin, responded in German. Prof. H. W. Wiley, of the Pure Food Commission, Washington, D. C., then made a short, humorous address. Chairman Chandler stated that owing to the late hour, while he had a wealth of speakers on his list, he would call upon but one more. He said they had among them a man that was the greatest spendthrift of the age, and introduced Comptroller H. A. Metz. Mr. Metz was received with a great deal of applause. He stated that he had thought that by the part he had taken in the arrangements of the dinner he had fixed it so that there would be no opportunity to call on him for any remarks. He stated that owing to the late hour he was not going to embarrass the guests with an extended talk, but that he wanted to take this opportunity to express to Sir William the great pleasure it was to him to have him present at this time, and also to thank him for the warm, hospitable treatment accorded him when he attended the meeting in London last year.

THE GUESTS.

Those seated upon the dais were: Professor H. W. Wiley, Commissioner of Patents Allen, Chancellor MacCracken, James Speyer, Sir Percy Sanderson, President Pritchett, H. H. Rogers, President Remsen, Dr. William H. Nichols, Rev. S. Parkes Cadman, Sir William Henry Perkin, Dr. Charles F. Chandler, President McGowan, Judge Wallace, President Butler, Adolf Kuttroff, Professor H. Schumacher, Jacob H. Schiff, Professor Walter Nernst, Comptroller Metz, President Finley, President Humphreys, Dr. W. F. Hillebrand.

Other guests were:

Acker, Charles E., Ackerson, G. G., Ackerson, J. B., Adler, L. N., Alexander, A., Alexander, J., Allen, Charles T., Allen, Commissioner; Almirall, R. F., Amend, O. P., Anderson, G. H. A., Andreae, A. R., Archbold, George; Armstrong, S. T., Atkinson, President; Atwood, Frank W., Austen, Peter T.

Baker, H. M., Baldwin, A. T., Bancroft, W. D., Barnes, H. O., Barnett, M., Baskerville, Charles; Beans, H. T., Beckers, William: Benjamin, M., Berolzheimer, D. D., Bishop, H. B., Black, S., Blan, S. A., Boardman, G. M., Boeddinghaus, H., Bogert, M. T., Bowman, W., Breneman, A. A., Briggs, T. L., Browne, W. K., Bruinier, A. G., Buel, H., Bunker, George R., Burgess, T. F., Burkhard, E., Butler, President; Byrne, A. D.

Cadman, The Rev. S. P., Campbell, J. H., Campbell, Wm., Carlton, E. W., Carroll, J. L., Carter, Stewart F., Cathcart, W. R., Cattell, J. McKeen; Chambers, V. J., Chandler, Charles F., Childs, W. H., Claflin, A. A., Clexton, Th. J.; Coblentz, V., Colby, E. A., Crane, F. D., Crocker, B. S., Culmann, J.

Danker, D. J., Danker, F. E., Danziger,

J. L., Darlington, Th., Derby, W. G., De-Regt, A. C., Dickson, F. W., Diestel, William; Dole, R. B., Drake, E. L. E., Dreyfus, L. A., Dreyfus, W., Drobegg, Gustav; Dubois, H., Dunn, C. E., Durkee, M. C.

Eames, Charles J., Easterbrooks, F. D., Edwards, Ch. E., Eilers, Anton; Elliott, A. H., Engelhard, Charles; Evans, W. J., Ewing, A.

Falk, K. G., Fay, I. W., Feeley, E. J., Fiebiger, P., Finley, President; Finn, G. H., Fischer, C., Fischesser, G., FitzGibbon, R., Fohr, F., Fuehrlein, Charles; Fuerst, W. F.

Gagnebin, C. L., Gane, E. H., Garnaus, John C., Geisenheimer, A., Geisenheimer, Th., Geisler, J. F., Gerry, James L., Gibbs, A. E., Gifford, L., Gilean, R. H., Gillespie, G. J., Godfrey, W. H., Goldschmidt, K., Goldsmith, B. B., Grabfield, J. P., Grant, H. C., Graus, E. V., Graves, J. P., Gray, William S., Gref, A., Gref, W., Gudeman, E., Guttmann, L. F.

Hafele, J. E., Hague, James D., Haigh, D. L., Hale, A. C., Hallock, William; Hambly, F. J., Hanna, W. W., Harold, Joseph F., Hart, E., Hasslacher, J., Hebden, J. C., Heide, H., Hein, A. H., Heinsheimer, N., Hemingway, F., Henry, F. A., Herbert, Charles G., Herreshoff, J. B. F., Hesse, B. C., Hillebrand, W. F., Hochschild, B., Hochschild, Z., Hoffman, Wm. F., Hogben, W., Holbrook, F. A., Hoops, H., Horne, W. D., Hough, Judge; Humphreys, President; Hunt, W. M., Hurlburt, A. S., Hurlburt, E. B., Hurley, William S.

Ittner, M. H.

Jacoby, A. H., Jahn, F., Jameson, A. H., Jayne, H. W., Jordan, R., Joyce, C. M.

Kaesche, Max B., Kahn, J., Kauder, E., Kaufmann, H. M., Kempte, H., Kern, Edward F., Kimball, J. P., King, W. C., Kinnicutt, L. P., Kittredge, H. G., Knudson, Hy., Koch, George W., Kohnstamm, E. H., Kohnstamm, E. V., Krebs, H. J., Kuebler, Alfred; Kunz, George F., Kunz, George H., Kuttroff, Adolf; Kuttroff, Edwin; Kuttroff, Fred.

Lamb, Prof., Langeloth, J., Langmuir, A. C., Laury, N. A., LeCléar, Th., Levi E., Leyinstein, E., Lewis, H. E., Lichtenstein, A. F., Lieber, H., Lips, K., Little, A. D., Livingston, H. S., Loeb M., Loring, Charles; Lunt, R. S., Luther, G. M.

MacCracken, Chancellor; Main, T. F., Mallet, J. W., Manley, J. W., Mann, B., Marston, J. P., Matheson, Wm. J., Mathews, J. A., Matthews, J. M., May, George H., Mayer, William T., Mayo, C. A., McClain, R., McCarren, P., McDowell, A. H., McGowan, P. F., McCrane, Hugh; McIlravy, W. N., McKelvey, J. William; McKenna, Charles F., McMurtrie, William; McVicker, W. B., Mead, Mr., Mersereau, G., Merz, A., Merz, C., Merz, E., Metz, H. A., Metz, G. P., Metzger, F. J., Meyer, F., Miner, H. S., Moody, H. I., Moore R. W., Morgan, Lancaster; Morley, E. W., Müller, Charles F., Muurling, I. J. R., Myers, William S.

Neher, F., Neiman, H. S., Nernst, Professor; Newell, E. J., Nichols, C. W., Nichols, F. H., Nichols, Wm. H., Nichols, Wm. H., Jr., Nield, J. H., Noyes, William A.

Oakes, F., Oliphant, J. H., Olney, L. A.

Palmer, Charles S., Palmer, George; Palmer, H. B., Parker, T. J., Parsons, Charles L., Patz, E. O., Pearce, James; Pellew, Charles E., Pennock, J. D., Perkin, William H., Peters, J. M., Pickhardt, Carl; Pickhardt, W. P., Pitman, J. R., Plaut, A., Plaut, J., Pollmann, H., Pond, F. J., Poucher, M. R., Pough, F. H., Prichett, President; Prochazka, George A.

Reed, H. W., Reed, L. S., Reichard, R., Remsen, resident; Rianhard, Th. M., Rice, Isaac L., Richardson, C. G., Riederer, H. S., Riehl, William; Ripperger, A., Ritchey, William; Robertson, W. J., Robinson, C. I., Rogers, A., Rogers, H. H., Rosengarten, George D., Rosenheim, P. J., Rowley, Walter C., Ruhl, Louis; Runkle, John C.

Sadtler, S. S., Sanderson, Consul-General; Saxe, S., Schaumann, W. M., Schieffelin, William J., Schiff, Jacob H., Schmidt, M. F., Schniewind, F., Schnitzler, P., Schumacher, Professor; Schwarz, G. A., Schweitzer, H., Schwerin, L. R., Seaman, William H., Seeler, F., Seuffert, O., Sheedy, B. D., Sheffield, G. V., Simon, G., Sjöström, I. L., Sjöström, P. R. G., Sjöström. W. L. Skerten, W. B., Smith, Edgar F., Smith, E. W., Smith, I. J., Smith, J. William; Snow, George M., Spanutius, F. W., Speiden, C. C., Speiden, M., Speyer, James; Speyers, C. L., Spurge, E. C., Starr, J. W., Steele, S. H., Steinbecker, Karl; Stillwell, A. G., Stone, George C., Stone, I. F., Strickler, E. H., Stütz, E., Supf, F., Swenarton, W. H., Sykes, W. F.

Talbot, H. P., Taylor, A. E., Taylor, Charles E., Taylor, Edward R., Teeple, J. E., Teller, George G., Toch, H. M., Toch, M., Tucker, S. A., Turner, S., Tuyman, C.

Vieweger, George; Von Isacovics, A., Von Sallis, E.

Wagner, George H., Wagner, T. B., Waldman, L. I., Waldo, H. L., Waldo, Rhinelander; Walker, Hy. V., Walker, W. H., Wallace, F. A., Wallace, Judge; Walter, W., Warburton, M., Wardwell, E. H., Warner, A. H., Waugh, Eugene; Whaley, G., Whitaker, M. C., Widmann, E. A., Wiener, Wm., Wiggart, O., Wigglesworth, H., Wiley, H. W., Wilke, Wm., Williams, W. S., Wittmack, C. A., Wood, S. W., Woodbury, J. McGraw; Woodman, D., Wynkoop, G.

Zabriskie, C. B., Zerban, F., Zimmermann, F., Zinsser, August; Zinsser, F. G.

Obverse. Reverse.

PERKIN RESEARCH MEDAL.

BOSTONIANS PAY TRIBUTE.

BANQUET TO SIR WILLIAM AT ALGONQUIN CLUB.

Reception Given Great Discoverer Before Dinner—F. E. Atteaux Extends Warm Welcome—Gov. Guild Cheered Heartily When He Was Introduced—William Whitman Makes Able Address.

BOSTON, Mass., Oct. 11 (Special).—The dinner given in honor of Sir William H. Perkin at the Algonquin Club last evening was attended by about 170 members of the dyestuff and chemical trades and their guests. Those invited to the banquet were asked to attend a reception at six o'clock, and the meal was served half an hour later. The gathering was under the direction of Frederick E. Atteaux, of Boston, and the toastmaster of the evening was Prof. H. P. Talbot of the Massachusetts Institute of Technology.

The speaking began at 8.30 o'clock and lasted for nearly three hours, during which there was hearty evidence on the part of the auditors of their appreciation and enjoyment.

F. E. Atteaux was the first to speak. He expressed briefly the pleasure he felt in welcoming Sir William, and hoped that the latter would carry back to England as pleasant memories of this visit as the speaker and others had brought back from a recent trip to England. He also spoke feelingly of the tie of kindred that bound so many Americans to the subjects of King Edward VII.

Prof. Talbot was then introduced. This speaker proposed two toasts, one to the President of the United States and the other to the King of England, which were responded to while the orchestra played, in turn, the national hymns of the two countries. Prof. Talbot then referred to Sir William's discovery of fifty years ago, tangible results of which were probably

SALVER OF TEA SET PRESENTED. With permission of Tiffany & Co.

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QV240-1905-T35p

no more plentiful anywhere than in New England.

GOVERNOR GUILD HUMOROUS.

The next speaker, Governor Curtis Guild, Jr., was given three cheers, led by C. L. Gagnebin. Gov. Guild testified to the embarrassment he felt because his short notice required him to speak without preparation. He could without preparation, however, extend "hearty greetings, good will, and a God bless you, sir," to the guest of honor. This from Massachusetts, a State notable for the victories of peace, as well as those of war—a State that is now neither a safety deposit vault nor a summer resort. It is a lively commonwealth, the first textile State in the Union. Her citizens, therefore, are especially glad over any such progress as Sir William has forwarded—the man who had "turned the blackness of the coal mine into the rainbow of the heavens."

Mayor John F. Fitzgerald was unable to be present and was represented by the Hon. Thomas A. Mullen. This speaker said that as the "hub of the universe," Boston spoke for the whole wheel in heartily praising the work of the evening's guest. As Boston had also been referred to as the center of the solar system, Sir William must have drawn some of his inspiration from it (the sun).

ALCOHOL IN ARTS.

Senator Henry Cabot Lodge then prefaced his speech by admitting how reluctantly he had attended lectures on chemistry at Harvard and how hopelessly ignorant he was of the whole subject. He knew enough, however, to appreciate the magnitude of Sir William's work. He told how he had felt years ago that it was a mistake to tax alcohol used in the arts. Such a manifest burden on industry was wrong. The possibility of using such alcohol to drink had stood in the way of withdrawing the tax until recently. The late removal of the tariff on denatured alcohol, however, would now enable us to avail ourselves, as never before, of the benefits of Sir William's invention.

Captain W. Wyndham, the British consul at Boston, then spoke briefly. He was glad to have the opportunity to thank his hosts for their kindness to his distinguished fellow countryman.

UNIVERSITY GREETINGS.

President Henry S. Pritchett, of the Massachusetts Institute of Technology, then voiced the greetings of the institution of learning. He said in part: "In my opinion, the axis, so much talked of, is half-way between the State House and the Institute of Technology.

"The wonder of Sir William's discovery to me is that as a young man of eighteen he was able to apply it so well. More than the invention of a great man is required for results in these days. We can learn from Germany that the organization of scholarship and business ability is needed. We must compel science and industry to go hand in hand."

A COMPREHENSIVE TALK.

William Whitman, president of the Arlington Mills, was the next speaker. He said in part:

"You know Sir William's contribution to society; you are aware of his reward. The manufacturers of the world, and we of this commonwealth, owe him a debt which time cannot outlaw. The nations pay him tribute. There is no discordant note in the universal psalm of praise that must sound so pleasantly to his ears, the love and gratitude of his fellow-men. The spirit of genius that inspired our distinguished guest in his work is the attendant spirit of our print works, our dye houses, our chemical works, all kindred industries, and also of our seats of learning, with their extensive laboratories of research. It is the spirit of development that will watch over the progress of his great work, the spirit that has led men to adapt his new ideas to the physical resources of life for his comfort and his general welfare."

In commenting on the industry which he originated, Sir William says:

"There is one feature connected with this industry and its great development which is of interest, and that is the immense amount of employment it has created for men of all classes, and, of course, especially for the working classes. When one considers its ramifications and its influence on other industries, it is difficult to gauge this, but it is often a very pleasant thought to me."

In another instance he says of himself and his associates:

"The net result of our work should be the benefit of mankind."

And again he says, with reference to the origin and foundation of the coal tar color industry:

"The origin and foundation was the outcome of scientific research, and also its development has been due to research; hence, its unique character and marvelous growth, the fruit of the union of science and industry. When I was young it was thought quite infra dig. for a scientific man to associate himself with industry. The possibility of becoming a manufacturer, owing to the discovery of mauve, made me feel this very much, on acocunt of my love for scientific work."

We learn that the wonderful growth of that industry, which its originator has said should have as its net result the benefit of mankind, was due to the union of science and industry—scientific research with its discoveries and development of new ideas, and industry with its application of those ideas to material things for the benefit of mankind. And then we note that the man who tells us these things was disturbed in his youth by the opinion prevalent in England that it was quite beneath a scientific man's dignity to be associated with industry. It is here, gentlemen, that I find my theme, for there is borne to our ears to-day a cry against "Commercialism" against commercial men, the men governing great industries which have, in my opinion, as their net result the benefit of mankind. The cry is perhaps an echo of that similar cry in England that disturbed our distinguished guest. Our scientific men, our men of learning, our preachers, and many other educated and intellectual men have expressed their fear of what they believe to be a great danger of modern times. This danger they have been pleased to call "commercialism." Recent unhappy revelations have increased these laments until the term "commercialism" is used as implying a taint.

To-night we have as our guest a man whose point of view it will be well for all to adopt, a man who realizes that the benefit of his lifework has been the fruit of the "union of science and industry," and who undoubtedly believes that the man of commerce and of industrial affairs is entitled to full credit for the part he has played in the development of that great industry. We, the manufacturers of Massachusetts, and all who are identified with what are called commercial interests, pay homage to learning and to science.

In closing, I may say that if I doubted for a moment the true spirit of commercialism, I should struggle with that doubt and try to believe that honesty is the best policy, and that fair dealing is the basis of all our commerce.

When Mr. Garfield was nearing his death, at his request he was taken to a cliff overlooking the sea, where he sat for many hours. In writing of him, our great statesman, Mr. James G. Blaine, concludes with this wonderful thought:

"Let us believe that in the silence of the receding world, he heard the waves breaking on a farther shore and felt already on his wasted brow the breath of the eternal morning."

What a world of happiness is expressed in the few words, "Let us believe." And I, at this point, find myself happy in saying to all commercial men, let us believe that the true spirit of commercialism is based upon honesty and fair dealing and the ancient tradition that we should do unto others as we would be done by, and that that spirit is a noble spirit which should be spoken of with reverence and not with scorn.

Comptroller Herman A. Metz then said that he could go back to New York with an easy mind, knowing that he had left Sir William in the hands of friends. On parting, his advice to the visitor would be, however, to see a doctor before he tried to leave Boston.

PRESENTATION OF MEMENTO.

Dr. W. H. Walker then presented Sir William with a handsome silver punch bowl, inscribed with words of good wishes from the coal tar and chemical interests of Boston. It had been the speaker's intention to review fully the results of Sir William's invention. The lateness of the hour caused him to refrain. He would say, however, that had it not been for this discovery the world would probably not yet have known the germ theory of disease. Here was a result in the foreign field of medicine.

SIR WILLIAM'S RESPONSE.

Sir William then expressed his thanks for the beautiful gift and for the interest of those who had arranged this jubilee celebration. The speaker had intended to prepare a fresh paper, but he had been persuaded to repeat the statements he had made to those who attended the New York dinner in his honor. With this address the meeting came to an end.

OTHER FUNCTIONS.

On Thursday morning Sir William and his party visited Harvard College, where they were received by President and Mrs. Eliot. This visit was followed by luncheon at the Country Club, and in the afternoon the Institute of Technology buildings were inspected. There the distinguished visitor spoke briefly to a gathering of students. That evening Sir William was present at the dinner given by the Victorian Club in honor of Sir Henry Mortimer Durand, the British ambassador.

On Friday some of the big textile plants at Lowell and Lawrence, including the Arlington Mills and the new Wood Worsted Mill, were visited. The party was to leave Boston for Washington, D. C., to-day. Comptroller Herman A. Metz and Mr. and Mrs. E. A. Wyndham accompanied Sir William and his wife and two daughters from New York.

The following are the names of guests at the banquet:

The guests at the head table were:

Prof. T. W. Richards, A. Merz, Dr. H. P. Talbot, John Hogg, Hon. J. J. McCarthy, President Henry S. Pritchett, Sir William Henry Perkin, F. E. Atteaux, Governor Curtis Guild, Jr.; Capt. W. Wyndham, Hon. John F. Fitzgerald, William Whitman, Hon. Henry Cabot Lodge, Dr. W. H. Walker, Hon. H. A Metz.

The other guests were:

R. W. Neff, N. F. Ayer, W. S. Draper, R. R. Dixon, A. L. Norton, H. E. Stuart, James Lennox, F. K. Haddock, N. Weber, B. G. A. Rosentwist, O. Gurner, C. V. G. Sjostrom, C. A. Catlin, G. W. Miles, F. A. Davidson, P. P. Sharples, G. W. Priest, James F. Preston, Thos. C. Austin, Prof. L. A. Olney, O. Kunhardt, William Lee, G. W. Lennox, R. A. Bowen, W. F. Sjostrom, Prof. Charles R. Cross, Dr. F. J. Moore, H. J. Williams, A. D. Little, A. H. Gill, James Lund, Dr. J. F. Norris, W. C. Durfee, F. D. Williams, C. A. Howe, Fred Walsh, Edmund Lovering, C. E. Eager, R. E. Woodward, W. K. Browne, Mr. Field, H. C. A. Seebohm, I. J. R. Mourling, F. J. Oakes, W. F. Oburg, Geo. Linder, Geo. R. Bower, E. D. Pearce, D. G. Wing, F. A. Claflin, C. H. Fish, H. S. Duckworth, A. A. Claflin, W. B. Revere, John E. Hunton, T. J. Clexton, Dr. Livermore, G. P. Anderson, Moses Pollard, John I. Craven, C. H. Dunker, W. J. Weber, F. T. Stantial, C. F. Johnson, W. D. Hartshorn, M. J. Whitall, Henry Howard, A. H. Warner, E. L. E. Drake, W. D. Tobey, F. L. Wells, Dr. F. J. Manahan, F. J. Sweeney, E. J. Gilliland, Percy Wright, R. C. Fuller, J. H. Bancroft, H. Kenworthy, G. W. Beach, J. W. Linnehan, J. H. Bulkley, Dr. L. P. Kinnicutt, F. W. Hobbs, H. J. Potter, W. D. Livermore, Ashton Lee, W. K. Fairbanks, C. J. H. Woodbury, A. E. Sproule, J. R. Marble, R. F. Herrick, F. E. Mawson, James Glen, Daniel Wright, F. W. Atwood, F. O'Leary, F. S. Higginson, J. F. Bannan, E. A. Widmann, L. Waldman, W. W. Hanna, Thomas O'Shea, Dr. Downey, Eugene Barry, A. B. Seeley, D. J. Danker, S. S. Steele, J. P. Marston, S. J. Corey, Mr. Fletcher, G. L. Cabot, H. M. Whitney, W. L. Phinney, C. L. Gagnebin, H. H. Gay, F. H. Manning, F. H. Elmore, Joseph Bennett, Hon. J. F. O'Connell, I. Pevear, L. Beebe, C. E. Wetherbee, Charles E. Peakes, Spaulding Bartlett, Joseph R. Smith, G. F. Bampton, J. P. Farnsworth, A. Newbert.

CHEMISTS GIVE BANQUET.

Sir William Henry Perkin was tendered a banquet by the Chemists' Club of New York at its club house, 108 West Fifty-fifth street, on Tuesday evening of this week. In telling the members of the club of his early struggles Sir William said that once the great Michael Faraday refused to attend his lectures at his written request, but later came to agree with him in all his theories of aniline dyeing.

[From Editorial Columns.]

THE PERKIN JUBILEE.

We cheerfully add our contribution this week in honoring the man who has done so much to develop a most important section of the textile industry. Our report of the Perkin Jubilee, printed in mauve ink, reflects in an incomplete way the feeling of high respect and deep gratitude which all in any way associated with this celebration have endeavored to express for the inventor and discoverer, who, almost in his boyhood days, appreciated the possibilities of the discovery which he so fortunately made.

The banquet tendered Sir William Henry Perkin in this city, and again in Boston, in addition to the many substantial tokens of respect, give but a faint idea of the impression his personality has made upon the color industry. Sir William himself never dreamed of the far-reaching results of his discovery, not only in the development of the coal tar color industry, but also in its various ramifications in the realms of science and art. Take, for example, the vistas which were opened through the application of the new substance in the amelioration of suffering through the science of medicine. This alone would have been sufficient to have lived for, but it is granted to few to see the fruit of their labors so happily brought to a successful conclusion as in the case of him whom the dyestuff and chemical trades have delighted to honor.

These gentlemen are to be congratulated that with able leadership it has been possible to bring together such representatives of this mighty industry and around the festal board to give expression to their heartfelt congratulations for their own and their honored guest's prosperity. This trade is destined to further triumphs in the commercial field, but it is not likely that ever again will such progress be made at a single bound as when by artificial means the colors of the rainbow were reproduced in all their beauty and varied gradations. While ocular evidence gives proof of the innate modesty of Sir William, he cannot but feel just pride as he views the proportions to which the industry, of which he was founder, and which he established in face of seemingly insurmountable difficulties, has grown.

The venerable gentleman leaves this country after cementing more firmly the ties of brotherhood which bind America to sister nations. In this respect alone has his visit been of peculiar significance to our commercial history, and it is safe to say that the events surrounding his all too short sojourn will long be remembered by those who had the privilege and honor of association with him.